Space Weather Forecast

Issued on Thursday, 09 November 2023 at 01:10 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight Chance of G1/Minor Geomagnetic Storms at first, but risk declining. Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low with only Common-class flares observed in the last 24 hours, the largest of which came from a sunspot region near centre-disk. There are five numbered and two unnumbered sunspot region on the visible disc. The largest region, located in the south, remains fairly stable. A region in the northwest has decayed in recent hours. Another region, located near centre-disk is the most magnetically complex and has been the main source of the common-class flare activity. The remaining regions are small, simple and stable.
A coronal mass ejection (CME) on the northwestern limb was observed around 08/0700 UTC has been analysed and is forecast to miss ahead of Earths orbit. No other Earth directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: Solar winds showed the continued impact of fast solar winds. Wind speeds were strong, generally 600-700 km/s. Total interplanetary magnetic field (IMF) strength showed a slow declining trend, but has remained generally weak. The important north-south component varied weakly. Geomagnetic activity has been generally Quiet to Unsettled (Kp2-3), but with an isolated Active (Kp 4) from 0300-0600 as observed by BGS.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary
Solar Activity: Generally Low solar activity is expected through the period, but with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: No CMEs currently forecast to reach Earth. Elevated to strong wind speeds are likely to continue through Day 1 (9 Nov) due to the ongoing HSS from CH67/-, before a gradual decline through Days 2 and 3 (10-11 Nov).
Geomagnetic activity expected to be generally Unsettled (Kp3) initially, with a slight chance of further isolated G1/Minor Storm intervals (Kp5) on Day 1. This risk reducing into the period with activity expected to gradually decline through the following days as the HSS eases to generally Quiet (Kp1-2) levels.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels with no solar radiation storms occurring.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	15	5	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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